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REMARKSRejections under 35 U.S.C. § 112

Claims 1, 3-5, and 23-35 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Applicants respectfully disagree that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Support for each of the amendments in claims 1, 3-5, and 23-35 can be found in the application, including the claims, as originally filed. For example, support for the amendments to claim 1 can be found on the paragraph beginning on line 6 of page 10, the succeeding paragraph which begins on line 20 of page 11 and continues to the following page, the paragraphs beginning on line 16 of page 13 up to and including the paragraph beginning on line 5 of page 16, the paragraph beginning on line 5 of page 21, the following paragraph which begins on line 12 of page 22, and the paragraph beginning on line 19 of page 23. Support for the amendments to claims 3-5 can be found throughout the specification, including the claims as originally filed. For example support for the amendments can be found in the paragraph beginning on line 5 of page 21. Support for new claims 23-35 can also be found in the specification, including the claims, as originally filed. For example support for the amendments can be found in the paragraph beginning on line 3 of page 18, the paragraph beginning on line 18 of page 18, the paragraph beginning on line 21 of page 15, the paragraph beginning on line 5 of page 21, the paragraph beginning on line 12 of page 22, the paragraph beginning on line 19 of page 28, as well as the paragraph beginning on line 15 of page 34.

Applicants also respectfully disagree that the specification does not enable a person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate with the scope of claim 26. The specification explicitly enables one of ordinary skill in the art to convert a ferrous chloride to ferrous sulfate. The specification provides that ferrous chloride is converted to ferrous sulfate, in accordance with one or more embodiments, by the addition of

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sulfuric acid or a sulfate-containing species as discussed, for example, in the paragraph beginning on line 18 of page 18 as well as the succeeding paragraph which begins on line 23 of page 18 and the paragraphs beginning on line 18 of page 19 up to line 4 of page 21.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

Claims 3-5, 23-25, 28, 29, 33 and 34 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention.

Applicants respectfully disagree that claims 3-5, 23-25, 28, 29, 33, and 34 are indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The phrases "said step" and "the step" have proper antecedent basis in the independent claims from which these claims depend. Nonetheless, Applicants have amended independent claims 1 and 26 to clarify that the limitations recited therein refer to the steps relevant to the methods in accordance with one or more embodiments of the present invention.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Rejections under 35 U.S.C. § 103

Claims 1, 3-5, 8-10, 23-35 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the teaching of Czarnowski in Unexamined German Application No. DE 4122920A1 (Czarnowski) alone or the teaching of Yatomi et al. in Japan Patent Application Publication No. 10-130026 (Yatomi et al.) alone, or each in view of Hedenäs et al. in European Patent Application Publication No. 0 032 886 A1 (Hedenäs et al.).

Applicants respectfully disagree that claims 1, 3-5, 8-10 and 23-35 would have been obvious over the teachings of Czarnowski or Yatomi et al. alone or each in view of the teaching of Hedenäs et al.

Czarnowski fails to teach, suggest or provide any motivation to cool a regenerated pickling process solution at a temperature sufficient to crystallize any ferrous sulfate salt

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in a regenerated pickling process solution. Czarnowski teaches adding sulfuric acid to spent hydrochloric acid and applying a vacuum to vaporize and collect gaseous hydrochloric acid from a solution of iron sulfate and sulfuric acid. Iron sulfate is separated from sulfuric acid in a vacuum crystallizer. Czarnowski does not teach, suggest, or provide any motivation to cool the regenerated pickling process solution at a temperature sufficient to crystallize at least a portion of any ferrous sulfate salt.

Yatomi et al. fails to provide any teaching, suggestion, or motivation to do the same. Yatomi et al. teach mixing sulfuric acid with hydrochloric acid and recovering a steam containing hydrogen chloride gas. Clearly, Yatomi et al. disclose a process that would have been contrary to the principles utilized by Czarnowski.

Thus, Czarnowski and Yatomi et al. fail to teach cooling to crystallize ferrous sulfate. Significantly, Czarnowski and Yatomi et al. fail to recognize the advantages of cooling to crystallize iron sulfate and instead focus on recovering hydrochloric acid by vaporizing and condensing it. Thus, the present invention advances the state of the art by providing a technique of regenerating pickling a pickling solution that minimizes or reduces energy consumption.

Hedenäs et al. also fails to cure the infirmities of the teachings of Czarnowski and Yatomi et al. Hedenäs et al. teach treating acid pickling solutions by precipitating iron salts corresponding to the particular pickling acid used, but fail to teach converting or reacting such corresponding iron salt to a less soluble species and, as in one or more aspects relevant to the present invention, to converting or reacting ferrous chloride to ferrous sulfate and crystallizing ferrous sulfate salt. Specifically, Hedenäs et al. teach treating a hydrochloric acid-based pickling solution by utilizing phosphoric acid to promote crystallization of FeCl_2 , i.e., the corresponding iron species generated during the pickling process. Hedenäs et al. also teach treating a sulfuric acid-based pickling solution by utilizing phosphoric acid to promote crystallization of FeSO_4 , the corresponding iron salt generated during the pickling process. However, Hedenäs et al. do not teach a method of regenerating an acid pickling solution comprising a step of converting an iron salt species into a less soluble species and crystallizing that less soluble species. Thus, the teachings of Hedenäs et al. fail to provide any teaching, suggestion or motivation to crystallize a ferrous salt species converted from a ferrous chloride species.

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Significantly, Hedenäs et al. teach a method that relies on principles that significantly differ from those relevant to the present invention, i.e., removing an iron salt species from a pickling solution and replenishing the acid to compensate for its consumption but not a method for regenerating the pickling solution by adding a species, e.g., a second acid, that converts the generated iron salt species during pickling operations into a less soluble species and regenerates the pickling solution.

Therefore, there is no *prima facie* case of obviousness and any *prima facie* case of obviousness is rebutted because one of ordinary skill in the art would not have had a reasonable expectation that a combination of the teachings of the cited references would successfully regenerate spent pickling process solutions. Moreover, none of the references teaches, suggests or provides any motivation for a method of regenerating a pickling solution comprising a step of cooling the spent pickling solution prior to adding sulfuric acid or converting ferrous chloride or a step of decreasing the solubility of ferrous sulfate in the pickling solution.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103.

CONCLUSION

In view of the foregoing Amendments and Remarks, this application is in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes that this application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

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reasonable expectation that a combination of the teachings of the cited references would successfully regenerate spent pickling process solutions. Moreover, none of the references teaches, suggests or provides any motivation for a method of regenerating a pickling solution comprising a step of cooling the spent pickling solution prior to adding sulfuric acid or converting ferrous chloride or a step of decreasing the solubility of ferrous sulfate in the pickling solution.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103.

CONCLUSION

In view of the foregoing Amendments and Remarks, this application is in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes that this application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/0214.

Respectfully submitted,
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Docket No. C01069.70006.US
Date: November 17, 2003
x11/16/03